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long, 4-lobed, with the nerves extended into awns between the lobes, the awns as long as, or in the central spikelet considerably longer than, the lobes. The lobes in the lateral spikelets hardly extend to the middle; in the central spikelet they extend half or two-thirds the length of the glume. The awns are either naked or ciliate, at least below. The palet is oblong-lanceolate, as long as its glume, 3-toothed or 3-lobed at the apex, and the two nerves in the central spikelet are extended into awns slightly longer than the teeth or lobes.

Presl's description says the flowers are all hermaphrodite; in our species my examinations lead me to think that only the lower flower of each spikelet is perfect. The genus is evidently related to *Ægopogon* and *Hilaria*, and by Bentham and Hooker is placed with them in the tribe Zoysieæ of the section Panicaceæ, to which they belong by virtue of the disarticulation of the flowers below the outer glumes. It has also affinity with the sub-tribe Pappophoreæ of the tribe Festucaceæ, where it was placed by Kunth, and where Mr. Hackel thinks it belongs.

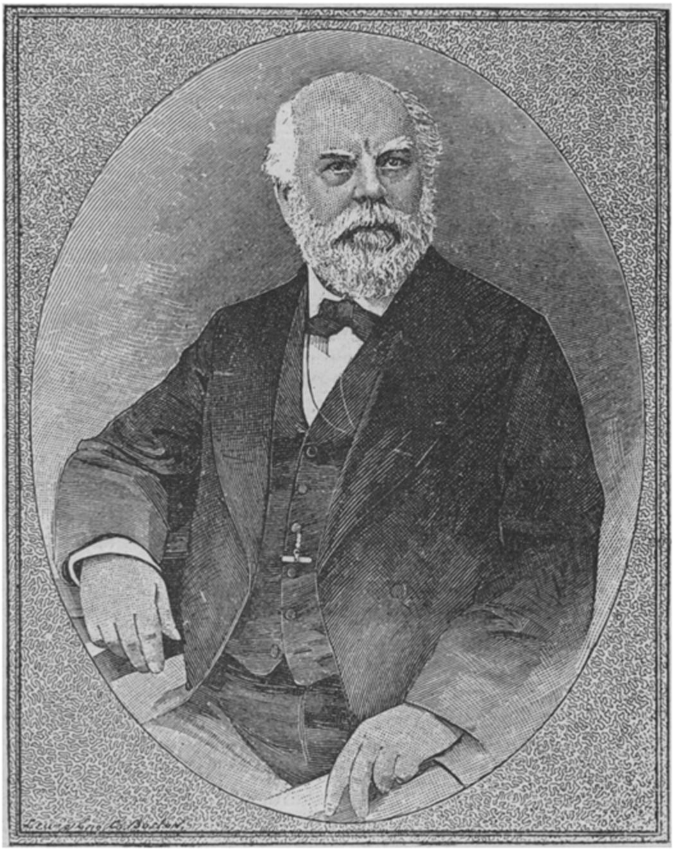
I am indebted for the drawings illustrating this article to Prof. W. J. Beal, for whom they were made by Mr. F. L. Scribner to illustrate a proposed work on grasses.

EXPLANATION OF PLATE XLV.—Fig. 1. *Cathestechum erectum*, V. and H., natural size. Fig. 2. One of the terminal clusters of three spikelets, showing the prolongation of the main axis, much enlarged. Fig. 3. Lower empty glume. Fig. 4. Upper empty glume. Fig. 5. Flowering-glume of first floret. Fig. 6. Flowering-glume of second floret. Figs. 7 and 8. Palea of the first floret, dorsal and anterior views. Fig. 9. Palea of the second floret. Fig. 10. Terminal rudimentary floret of the spikelet. Fig. 11. Pistil, with the imperfect stamens of the lower floret. Fig 12. A perfect stamen of one of the upper florets. (Figs 3 to 10 inclusive are enlarged on the same scale.)

George Engelmann.

George Engelmann was born in Frankfort-on-the-Main on the 2d of February, 1809, and died in St. Louis just after the completion of his seventy-fifth year, on the 4th of February, 1884, after an illness which had kept him from his scientific work but a few days.

Dr. Engelmann received his medical education and early scientific training at Berlin, Heidelberg and Frankfort. Agassiz, Alexander Braun, and Charles Schimper were among his college-associates and lifelong friends. He left Germany almost at once after his graduation, reaching New York in 1832. His first visit was to Philadelphia, where he was fortunate enough to make the acquaintance of Nuttall and other scientific men. His inclinations turning westward, he soon left the seaboard to seek a home in the almost unexplored regions beyond the Mississippi. He first went to St. Louis, but did not at once establish himself there. Desiring to see something of the western country before selecting a home, he undertook a long and solitary journey on horse-back through South-western Missouri, Arkansas and Western Louisiana. This journey, probably made in 1833, occupied six months. It nearly cost Dr. Engelmann his life, for he took a dangerous fever among the Arkansas swamps, into which his botanical zeal, no doubt, often led him. Fortunately he fell into the hands of a negro family, which nursed him faithfully through a long illness that cut short further exploration and hurried him back to St. Louis. Here he finally established himself as a physician in 1835. He had previously, however, gone to Germany, and, on his return, brought back with him to his new home the faithful and devoted companion who shared his labors, his trials and triumphs, for more than forty years. From 1835 until his death Dr. Engelmann continued to live in St. Louis and to devote to scientific investigations every moment which could be spared from a large and absorbing professional practice.



G. Engelmann

Engelmann's first botanical publication appeared in 1832, when he printed in Latin a *dissertatio inauguralis,* " De Antholysi prodromus," illustrated with drawings made by its author. No other botanical paper appeared from his pen until 1842, when he published in the *American Journal of Science* his monograph of North-American Cuscutineæ.

The appearance of this monograph, which was soon republished in the *Botanische Zeitung* and the *London Journal of Botany*, established Engelmann's reputation as a systematic botanist and procured for him the correspondence of Hooker and other foreign botanists. Several new species were described in this paper, and the genus *Lepidanche* was proposed for a *Cuscuta*-like plant of the western prairies. *Cuscuta* always interested Dr. Engelmann, and in 1859 he published in the *Transactions* of the St. Louis Academy an elaborate revision of the whole genus, for which he had long been collecting material.

In 1844 he published in the *American Journal of Science* a list of plants collected by Charles A. Geyer in Illinois and Missouri, in which several species were first described; and in 1845, in the *Journal* of the Boston Society of Natural History, in collaboration with Asa Gray, an enumeration of plants collected in Western Texas by his countryman, Ferdinand Lindheimer, a naturalist attached to the German colony of New Braunfels.

In 1848 was published his account of the plants collected on Dr. A. Wislizenus's expedition. The study of this collection exerted a powerful influence upon his subsequent botanical studies. It first drew his attention to Cactaceæ and *Pinus*, which continued to occupy his thoughts for the remainder of his life, and of which his knowledge was unequalled. As early as 1856, Dr. Engelmann published in the *Proceedings* of the American Academy a synopsis of the Cactaceæ of the territory of the United States. Two years later appeared his "Cactaceæ of the Boundary," in the second volume of the United States and Mexican Boundary Survey report. This paper, superbly illustrated with drawings made (under Dr. Engelmann's direction) by Roethe, is, perhaps, his best-known botanical work. Dr. Engelmann studied and described all the collections of Cactaceæ which, from time to time, were made in the Mexican boundary region, and, had he lived, would have elaborated the whole order in accordance with his latest views of the subject. He even proposed so late as last year to pass a considerable time in Northern Mexico for the purpose of studying these plants in their native country before finally giving to the world the final results of his long investigations.

Other difficult genera were studied by Dr. Engelmann. His predilections, indeed, were always for the most difficult and perplexing plants, and he willingly devoted himself to such genera only as less patient investigators hesitated to take up. Thus he mastered the North-American Euphorbiaceæ, elaborating all recent collections of the family, without, however, undertaking a complete revision of the order as represented in this country. He published an elaborate and exhaustive paper upon the North-American species of *Juncus*, and, later, one on the North-American *Isoëtes*. His published notes upon the North-American species of *Quercus*, and upon North-American *Abies*, *Juniperus* of the section Sabina, and upon the genus *Pinus*, contain the most valuable and trustworthy information that has appeared upon these plants. In 1873 he published, under the title of "Notes on the genus *Yucca*," his elaborate revision of the genus here first comprehensively treated. Two years later appeared his notes on *Agave*, in which are enumerated and described the species detected within the limits of the United States, as well as a few foreign species previously imperfectly known. For many years Dr. Engelmann studied the genus *Vitis*, and our knowledge of the North-American species of this is due in a large measure to his investigations. His last botanical publication, a sketch of the true grapevines of the United States, although written some months earlier, and previous to his last European journey, was issued late in 1883.

Dr. Engelmann's botanical writings were not voluminous. All his work, however, is characterized by the most careful and conscientious preparation, great, good judgment, classical methods of treatment, and remarkable thoroughness. His investigations were slow and laborious, often lasting for years in the case of a single plant. No botanist was ever less anxious to publish prematurely the results of his observations, or was less satisfied with the results of his own knowledge. So admirable, and in these days unusual, caution has made Dr. Engelmann's botanical writings masterpieces in their way, worthy to stand with the best productions of their nature which have yet appeared. This very caution and desire to wait for completeness, however, which has made Dr. Englemann's published papers what they are, has cost the world a vast store of valuable information collected by him during long years of careful investigation, but never quite ready, in his critical judgment, for publication.

Dr. Engelmann, in addition to his professional and botanical labors, was a most zealous meteorological observer, and, at the time of his death, was probably one of the oldest meteorologists in the United States. His meteorological and other miscellaneous papers, as well as his important botanical ones since 1859, have been published in the *Transactions* of the St. Louis Academy of Science, which he was largely instrumental in establishing, and which he long served as president.

Dr. Engelmann was a member of the American Academy of Arts and Sciences, a corporate member of the National Academy of Sciences, a foreign member of the Linnean Society of London, and an active or corresponding member of many other learned bodies. He long enjoyed the friendship, the respect and the correspondence of many of the most distinguished botanists of the age, everywhere the recognized authority in those departments of his favorite science which had most interested him.

(For this account of Dr. Engelmann's life and labors, and for the engraving which illustrates it, we are indebted to our cotemporary, *Science.*)

New North American Fungi.

By J. B. Ellis and B. M. Everhart.

Peziza (Mollisia) fumigata.—Densely gregarious, minute (.13–.16$^{\text{mm.}}$) sooty-black; disk nearly plane, scarcely margined, minutely papillose; asci oblong-cylindrical, 50 x 7μ; paraphyses thickened above; sporidia oblique or biseriate, oblong, 2–3-nucleate, hyaline,